

# इंटरनेट

# मानक

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“Step Out From the Old to the New”

IS 3717 (1977): Refined secondary lead [MTD 9: Lead, Zinc, Cadmium, Tin, Antimony and their Alloys]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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IS : 3717 - 1977

*Indian Standard*  
SPECIFICATION FOR  
REFINED SECONDARY LEAD  
( *First Revision* )

UDC 669.448.5



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INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

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**AMENDMENT NO. 1 APRIL 2011**  
**TO**  
**IS 3717 : 1977 SPECIFICATION FOR REFINED**  
**SECONDARY LEAD**

*(First Revision)*

*(Page 4, Table 1, col 2, Grade 99.97)* — Substitute the following for the existing:

Constituent	Percent
Lead, <i>Min</i>	99.97
Impurities, <i>Max</i> :	
Bismuth	0.025
Silver	0.002
Nickel	0.001
Copper	0.003
Arsenic	0.001
Antimony	0.005
Tin	0.001
Iron	0.002
Zinc	0.002
Cadmium	0.001
Total impurities, <i>Max</i> :	0.03

# Indian Standard

## SPECIFICATION FOR REFINED SECONDARY LEAD

### ( First Revision )

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( Continued on page 2 )

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( Continued from page 1 )

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# *Indian Standard*

## SPECIFICATION FOR REFINED SECONDARY LEAD

### ( *First Revision* )

## 0. FOREWORD

**0.1** This Indian Standard ( First Revision ) was adopted by the Indian Standards Institution on 31 May 1977, after the draft finalized by the Lead, Zinc, Tin, Antimony and Their Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

**0.2** In order to conserve lead, the use of refined secondary lead is encouraged for certain applications. This standard was earlier published in 1966. Due to experience gained during these years, it was felt necessary to revise certain limits of impurities in these grades.

**0.3** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## 1. SCOPE

**1.1** This standard covers the requirements for three grades of refined secondary lead, namely, Grades 99.97, 99.9 and 99.8.

## 2. SUPPLY OF MATERIAL

**2.1** General requirements relating to the supply of refined secondary lead shall conform to IS : 1387-1967†.

**2.2** The material shall be supplied in the form of pigs.

## 3. CHEMICAL COMPOSITION

**3.1** The chemical composition of refined secondary lead, when analysed in accordance with IS : 403-1964‡ shall be as given in Table 1.

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\*Rules for rounding off numerical values ( revised ).

†General requirements for the supply of metallurgical materials ( first revision ).

‡Methods of chemical analysis of lead and antimonial lead ( revised ).



**TABLE 1 CHEMICAL COMPOSITION OF REFINED SECONDARY LEAD**

( Clause 3.1 )

CONSTITUENT	GRADE		
	Percent	Percent	Percent
Lead, <i>Min</i>	99.97	99.9	99.8
Impurities, <i>Max</i> :			
Bismuth	0.02	0.05	0.05
Silver	0.002	0.003	0.005
Copper	0.003	0.02	0.100
Arsenic	0.002	0.005	0.005
Antimony	0.005	0.02	0.06
Iron	0.003	0.005	0.005
Zinc	0.002	0.005	0.005
Total impurities, <i>Max</i>	0.03	0.1	0.2

**3.1.1** The analysis may be made by spectrographic methods, if mutually agreed to between the purchaser and the manufacturer.

#### **4. FREEDOM FROM DEFECTS**

**4.1** Pigs shall be reasonably free from dross, slag and other foreign inclusions and shall have a clean surface.

#### **5. MASS**

**5.1** Unless specified otherwise, the mass of each pig shall not exceed 50 kg.

#### **6. SAMPLING**

**6.1** The material shall be sampled in accordance with IS : 8439-1977\*.

#### **7. RETEST**

**7.1** If the sample prepared under 6.1 fails to meet the requirements specified under 3.1, two more analyses shall be conducted on the same sample in order to confirm that the analysis has been done properly. If both analyses results satisfy the requirements specified under 3.1 the lot shall be accepted.

\*Methods of sampling lead and lead alloys.

## 8. MARKING

**8.1** Each pig shall be legibly marked with:

- a) Cast number,
- b) Grade of the material, and
- c) Manufacturer's initials or recognized trade-mark.

**8.1.1** The material may also be marked with the ISI Certification Mark.

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

# INDIAN STANDARDS

## ON

### LEAD, ZINC, TIN, ANTIMONY AND THEIR ALLOYS

#### IS:

- 25-1966 Antifriction bearing alloys ( *second revision* )
- 26-1966 Tin ingot ( *second revision* )
- 27-1977 Pig lead ( *third revision* )
- 193-1966 Soft solder ( *second revision* )
- 209-1966 Zinc ( *second revision* )
- 211-1966 Antimony ( *second revision* )
- 404-1962 Lead pipes ( *revised* )
- 405-1961 Lead sheet ( *revised* )
- 713-1966 Zinc base alloy ingots for die casting ( *revised* )
- 742-1966 Zinc base alloy die castings ( *revised* )
- 1339-1965 Lead alloys for sheathing of electric cables ( *revised* )
- 1654-1966 Antimonial lead ( *revised* )
- 1655-1968 Code of practice for manufacture of zinc alloy pressure die castings ( *first revision* )
- 1921-1975 Rosin cored solder wire ( *first revision* )
- 2258-1967 Rolled zinc plate, sheet and strip ( *first revision* )
- 4280-1967 Refined secondary tin
- 4699-1968 Refined secondary zinc
- 5479-1969 Solders for jointing aluminium and aluminium alloys
- 6344-1971 Cadmium metal

# INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

## Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

## Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

## Derived Units

Quantity	Unit	Symbol	Conversion
Force	newton	N	1 N = 1 kg.1 m/s <sup>2</sup>
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m <sup>2</sup>
Frequency	hertz	Hz	1 Hz = 1 c/s (s <sup>-1</sup> )
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>

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